REMARKS

Claims 1-7, 9-12 and 14-19 are pending in this application after amendments. Claims 1 and 11 have been amended to distinctly claim the invented subject matter. Originally filed claim 8 has been cancelled without prejudice; claims 13 and 20-24 have been withdrawn due to election/restriction. The amendments are supported by the originally filed description and claims, e.g., page 13, 3rd para. No new matter has been added.

Claims 1-7 and 10-12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Erb et al (US 5,854,863) in view of Cramp et al (US 4,560,248)

The examiner has rejected claims 1-7 and 10-12 as being unpatentable over Erb et al (US 5,854,863) in view of Cramp et al (US 4,560,248). The examiner has provided the reasonings for rejections to each claim; thus the following discussion will be directed to each claim sequentially for clarity.

1.   **Claim 1**

i)   Examiner's reasoning for rejection

The examiner alleges that for claim 1 Erb discloses a sensor that includes a fiber optic cable (fiber 12) which has had the cladding stripped off of one portion of the fiber (col. 10 lines 22-23) and covered with a coating (col. 10 lines 33-36; Table 1), and also the sensor chamber that contains a fluorophore or precursor which combines with the target molecule to measure the extent of the immuno-chemical reaction (col. 6 lines 42-44 & 49-51). The examiner concedes that while Erb discloses using a fluorophore, the reference is silent regarding the flurophore or precursor being immobilized within the coating.

The examiner further alleges that Cramp discloses a fiber optic sensor with a bonded dye or precursor that is used for detecting changes in a chemical or physical property by using a chromophore bound to a porous substrate. More specifically, the examiner alleges that for claim 1, Cramp discloses that the chromophore coating extends into a porous substrate (col. 2 lines 33-35; Abstract) which is being interpreted as "within

the coating", and this type of coating whereby the dye extends into the substrate provides the added advantage of increased sensitivity for the sensor (col. 2 lines 35-37); and this also overcomes the sensitivity problem of a surface bound dye that would normally be overcome by a more sensitive detector or a longer length of optical fiber (col. 2 lines 28-30).

The examiner concludes that based on the advantage of this coating, one of ordinary skill in the art would find it obvious to employ the embedded dye of Cramp within Erb in order to obtain the predictable result of increasing the sensitivity of the sensor.

>   ii)   Claimed subject matter of claim 1

Claim 1 is directed to a sensor for sensing and/or monitoring at least one property associated with transformation of a biochemical analyte by at least one microorganism. The sensor comprises at least one fibre optic member having at least one unclad portion; a coating applied to the at least one unclad portion <u>by sol-gel technique</u>; a precursor of the biochemical analyte immobilized within the coating, <u>said precursor is transformable by the at least one microorganism into the biochemical analyte</u>; wherein <u>the precursor is mixed with a solution of the coating prior to applying the solution of the coating to the at least one unclad portion to form the coating</u>; wherein the transformed biochemical analyte produces a spectroscopically detectable indicator of the at least one property, thereby detecting the at least one microorganism.

The claimed sensor detects the microorganism by detecting the transformed biochemical analyte as a result of the actions of the microorganism on a precursor which is immobilized within the coating applied onto an uncladded portion of the optic fiber. This working principle of the claimed sensor has not been disclosed or suggested by the prior arts.   More particularly, as highlighted by the above underlines, the mixing of precursor with the coating solution prior to applying the coating by sol-gel technique ensures that the precursor is evenly distributed within the coating, and the use of a precursor for one microorganism minimizes the impact of the binding of other microorganisms to the coating.

The sol-gel technique is critical for the claimed sensor.   The sol-gel coating

posses a homogenous refractive index and isotropic optical property, and displays high thermal stability, chemical and environmental durability. In addition, the sol-gel coating is effective to immobilize photosensitive indicator, and the free –OH binding sites lining the pore space and the pore size distribution within the glass matrices prevents indicator leaching. Furthermore, the sol-gel technique has the ability to produce glass at room temperature; consequently, the indicator used is not exposed to high temperature and their functional activity is retained.

iii) Examiner fails to establish a *prima facie* case of obviousness for claim 1 over Erb in view of Cramp

For the reasons discussed in detail hereinbelow, applicant respectfully submits that the examiner fails to establish a *prima facie* case of obviousness.

a) Erb

Erb discloses a biological sensor assembly for detecting the presence of a constituent of an immunochemical complex occurring in a certain medium. See, preamble of claim 1. Many well known assays such as ELISA takes the advantages of the specificity of immunochemical complexes such as antigen-antibody complexes to detect one partner (antigen or antibody) in a solution/medium by immobilizing another partner (antibody or antigen) onto a substrate; here Erb's biological sensor assembly is just one of those assays. The uniqueness of Erb's biological sensor assembly is that one partner is covalently coupled to the surface of the optic fibers. See, Examples I-III.

In order to reduce/eliminate the non-specific bindings during assay, Erb discloses a surface treatment that comprises stripping of cladding from fiber segments, and then coating the unclad fiber segment with amorphous fluoropolymers (e.g., Teflon AF) and Fluorinert FC-75 before covalently attaching one constituent of the immunochemical complex onto the fiber surface. See, col. 10 lines 22-67; Examples I-III. It is apparent that the coating in Erb has to function as a blocking layer to non-specific binding during assay, thereby no constituent of the immunochemical complex is present within the coating.

Furthermore, during assay, the optic fiber 12 is placed into medium 20 containing a component 22 of a complex forming one part of an immunochemical reaction and

whose presence, absence, and/or concentration is desired to be calculated and/or measured. Molecules 23 of a type capable of competing with component 22 for the formation of a complex with a second component 26, are attached to optical fiber 12 by means of a silane molecular chain 28. Component 26 is coupled to or compounded with a fluorophore tag 24. See, col.6 lines 41-50. It is a typical competition assay; component 22 in the medium competes with attached molecules 23 for the binding of fluorophore-tagged component 26 in the medium, and the presence of component 22 in the medium decreases the binding of fluorophore-tagged component 26 to the optical fiber-attached molecules 23 proportionally. It is evident that there is no concept of precursor in Erb's disclosure, and the principle of Erb's assay is relied on the simple formation of immunochemical complex.

b) Cramp

Cramp discloses an optical fiber for detecting changes in chemical or physical parameters, where the optical fiber core has bonded to its surface a chromophore responsive to the parameter, and the core preferably has a porous surface with the chromophore coating extending into the porous structure. See, Abstract.

Cramp explains that the porous structure is provided only for increasing the surface area for binding more dye molecules so as to enhancing the sensitivity of the sensor. See, col. 2 lines 27-37. One way to provide the porous structure is by coating the core with an outer layer of a silica glass using heat treatment. See, col. 2 lines 51-61. It is apparent that the coated porous structure has to be formed prior to the bonding of dye molecules onto the its surface, and the porous structure will increase non-specific bindings during assay, which may not be an issue for Cramp's assay because it detects the responses of the dye to the parameters. In addition, there is no concept of precursor in Cramp's disclosure.

c) Combination of Erb and Cramp fails to disclose all claimed features of claim 1

As discussed above, the claimed subject matter of claim 1 of the present invention is directed to a sensor for detecting microorganisms. In principle, the claimed sensor is relied upon the use of precursors that are transformable by the microorganism. In

contrast, both Erb and Cramp fail to teach or suggest such a sensor even if they are impermissibly combined as discussed below.

Furthermore, the claimed sensor comprises a coating that is formed by sol-gel technique, ensuring that the precursor is pre-mixed with the coating solution and evenly distributed within the coating. In contrast, the constituent in Erb or the dye molecules in Cramp are covalently attached to the surfaces of the optical fiber in Erb or the porous structure in Cramp, and the attachments are done after the coating is formed on the surface of the optical fiber in Erb or the porous structure is formed on the core of the optical fiber.

Therefore, Erb and Cramp, even if impermissibly combined, fail to teach or suggest all claimed features of claim 1.

d) Combination of Erb and Cramp destroys the working principle of Erb's sensor

While applicant has all reasons to believe that the above discussion is enough to overcome the rejections to claim 1, the following discussion is offered to better understand the claimed invention of the present application and appreciate the differences between the claimed invention and the cited prior arts.

In the practical use of the biological sensor assembly of Erb, the biggest concern is non-specific binding; that is common to all assays based on the formation of immunochemical complex. The approach to reduce/eliminate the non-specific binding proposed by Erb is to add a coating layer before covalently attaching constituents to the surface of the optical fiber. If, as proposed by the examiner, the porous structure in Cramp is used in the place of the coating in Erb, it will fail to perform the designated function of the coating because it is highly unlikely that the porous structure from Cramp is immune to non-specific binding. This is just one example showing that Erb and Cramp cannot be combined without changing the working principle of Erb.

e) Summary

In conclusion, applicant respectfully submits that no *prima facie* case of nonobviousness for claim 1 over Erb in view of Cramp was established.

2. **Claims 2, 3, 4, 5, 6, 7, 10, 11 and 12**

    i) Examiner's reasoning for rejections

The examiner rejects claims 2, 3, 4, 5, and 10 for the following reasonings. For claim 2, the unclad portion of the fiber disclosed by Erb is being interpreted as being "declad" and for claims 3 and 4, Erb further discloses using two or a plurality of unclad portions on two fiber segments (col. 10 lines 20-24). With regards to claim 5, Erb discloses measuring the fluorescence from the immuno-chemical reaction by a detector (detector 16, col. 7 lines 26-30). For claim 10, the fluorophore combines with the target molecules as discussed above.

Regarding claims 6 and 7, Erb is silent regarding the coating being glass and also being porous and thin. Cramp discloses for claim 6 that the dye is deposited on a porous glass layer (col. 2 lines 51-53) which is being interpreted as a film. For claim 7, the glass layer is being interpreted as being thin. Therefore, it would have been obvious for one of ordinary skill in the art to employ the glass layer suggested by Cramp in order to have a surface for the dye of Erb. The suggestion for doing so at the time would have been to provide a surface that enables the chromophore molecules to be bounded by silane agents within the interstices of the porous layer (col. 2 lines 59-61).

For claim 11, Erb discloses a sensor that includes a fiber optic cable (fiber 12) which has had the cladding stripped off of one portion of the fiber (col. 10 lines 22-23) and covered with a coating (col. 10 lines 33-36; Table 1). Also, the sensor chamber contains a fluorophore or precursor which combines with the target molecule to measure the extent of the immuno-chemical reaction (col. 6 lines 42-44 &49-51). Erb discloses a light source (source 14) that "co-operates" with the first end of the optical fiber (fiber 12; col. 7 lines 8-10) and includes a monitoring means or detector that is fully capable of "co-operating" with the unclad portion of the fiber. For claim 11, Cramp discloses that the chromophore coating extends into a porous substrate (col. 2 lines 33-35; Abstract) which is being interpreted as "within the coating". This type of coating whereby the dye extends into the substrate provides the added advantage of increased sensitivity for the sensor (col. 2 lines 35-37). This also overcomes the sensitivity problem of a surface bound dye that would normally be overcome by a more sensitive detector or a longer

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length of optical fiber (col. 2 lines 28-30). Based on the advantage of this coating, one of ordinary skill in the art would find it obvious to employ the embedded dye of Cramp within Erb in order to obtain the predictable result of increasing the sensitivity of the sensor.

For claim 12, Erb discloses that an evanescent field (field 42) or wave is generated from the input light (col. 7 lines 17-19)

    ii) Examiner fails to establish a *prima facie* case of obviousness for claims 2, 3, 4, 5, 6, 7, 10, 11 and 12 over Erb in view of Cramp

Claims 2, 3, 4, 5, 6, 7 and 10 are dependent from claim 1; thus all above discussion for claim 1 is applicable to these claims.

Claim 11 encompasses the claimed subject matter of claim 1; claim 12 is dependent from claim 11; thus all above discussion for claim 1 is applicable to these claims.

Therefore, applicant respectfully submits that the examiner fails to establish a *prima facie* case of obviousness for claims 2, 3, 4, 5, 6, 7, 10, 11 and 12 over Erb in view of Cramp.

Claim 9 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Erb in view of Cramp and in further view of Hirschfeld et al. (US 4,558,014)

The examiner rejects claim 9 under 35 U.S.C. 103(a) as being unpatentable over Erb in view of Cramp and in further view of Hirschfeld et al. (US 4,558,014). More specifically, the examiner concedes that Erb and Cramp are silent regarding the precursor as specified in claim 9, but alleges that Hirschfeld discloses an assay apparatus that uses fluorescent material such as a dye that has been incorporated into a coating on an optical fiber; for claim 9, Hirschfeld discloses that the dye (57) used with the fiber is methylene blue (col. 8 lines 66-col. 9 line 1). The examiner concludes that methylene blue is known within the art and it would have been obvious for one of ordinary skill in the art to employ methylene blue as suggested by Hirschfeld within the sensor of Erb and Cramp in order to have an indicator attached to the surface of the fiber, and the suggestion for

doing so at the time would have been in order to have a fluorescent agent that is an immunologically inert dye (col. 8 lines 46-48).

This rejection is respectfully traversed for the following reasons.

First, Hirschfeld fails to supplement the deficiency of Erb and Cramp even if they are impermissibly combined. The deficiency of Erb and Cramp has been discussed above.

Second, it is to be noted that the purpose of Hirschfeld's disclosure was to determine (quantify) the volume of one constituent; that is why they coated the active region of fiber 12 with a fixed quantity of immunologically inert fluorescent material 57 including methylene blue. See, Abstract; col. 8 lines 46-col. 9 line 1. This is a completely non-analogous art. Furthermore, the immunologically inert fluorescent material such as methylene blue is not a precursor that is suitable for being transformed by one microorganism.

Therefore, applicant respectfully submits that the examiner fails to establish a *prima facie* case of obviousness for claim 9 over Erb in view of Cramp and in further view of Hirschfeld.

Claim 14 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Erb in view of Cramp and in further view of Dhadwal et al. (US 2003/0152308 A1) and Ligler et al. (US 5,496,700)

The examiner rejects Claim 14 under 35 U.S.C. 103(a) as being unpatentable over Erb in view of Cramp and in further view of Dhadwal and Ligler.

The detailed reasons for the examiner's rejection are as follows.

For claim 14, Erb discloses the step of using a sensor that includes a fiber optic cable (fiber 12) which has had the cladding stripped off of one portion of the fiber (col. 10 lines 22-23) and covered with a coating (col. 10 lines 33-36; Table 1). Also, the sensor chamber contains a fluorophore or precursor which combines with the target molecule to measure the extent of the immuno-chemical reaction (col. 6 lines 42-44 & 49-51). Erb discloses using a light source (source 14) that "co-operates" with the first end of the optic fiber (fiber 12; col. 7 lines 8-10) and includes a monitoring means or

detector that receives a light from one end of the fiber. The sensor of Erb is "located" or placed within a flow tube that allows the fiber to come into contact with a fluid sample (col. 15 lines 10-14) and the light or electromagnetic output is analyzed by a light energy detector (detector 16; col. 6 lines 20-24). Erb is silent regarding the steps of monitoring the emission from the unclad portion of the fiber and determining the presence of microorganisms.

Cramp does not explicitly state that the light from the unclad portion of the fiber is monitored by a detector.

Dhadwal discloses a capillary wave guide that carries a fluid sample that fluoresces when an excitation beam is sent down the axial length of the capillary tube. For claim 14, Dhadwal discloses that light is delivered to the optical fluid connector by an optical fiber and includes a collector constructed of optical fibers perpendicular to the capillary ([0018]). These fibers collect the light emitted from the fluid sample and send the light to data processing equipment for measuring and analyzing the collected fluorescent data ([0046]). Also, Dhadwal demonstrates that the technique of monitoring electromagnetic output with a sensor that is perpendicular to the axis of a fiber or tube was known at the time of the instant application. Further, the steps of using this orientation of the sensor would have been recognized by the skilled artisan as an alternative to receiving the light from the sample through the distal ends of the optical fiber and would minimize the noise within the data sent to the processing unit. Therefore, it would have been obvious to one of ordinary skill in the art to employ the steps of using the detector of Dhawal within the measuring steps of Erb and Cramp in order to obtain the predictable result of detecting a target molecule.

However, Erb, Cramp and Dhawal are silent regarding the step of testing for a microorganism. However, the combined testing steps of Erb, Cramp and Dhawal can be adapted to test or identify microorganisms within the fluid sample.

Ligler discloses a rapid detection and identification of microorganisms that for claim 14 includes the steps of using a coated optical fiber waveguide for detecting microorganisms (col. 3 lines 57-59). Therefore, it would have been obvious to one of ordinary skill in the art to employ the step of testing for microorganisms as suggested

within the optical fiber sensor of Erb, Cramp and Dhawal. The suggestion for doing so at the time would have been in order to capture and detect a microorganism of interest (Abstract).

Applicant respectfully traverses the rejection for the following reasons.

First, claim 14 includes all subject matters claimed in claim 1; thus all above discussion pertinent to claim 1 is applicable to claim 14. Then, the following discussion will focus on whether Dhadwal and Ligler supplement the deficiency of Erb and Cramp for reaching the claimed subject matter in claim 14.

Second, Dhawal employs the similar principle disclosed in Erb and Cramp to detect specific molecules in a fluid sample by applying the internal surface of a capillary bore with a coating that is able to bind the specific molecules. See, [0032], [0033], FIG.3. It is to be noted that the sensor disclosed by Dhadwal has a completely different configuration from the claimed sensor of the present invention. In Dhadwal, the sensor comprises a capillary 12 and a optical/fluid connector 24, where the connector 24 comprises one optical fiber 26 for either delivering excitation light energy 27 to the capillary 12 or collecting fluorescent emission from the fluid sample injected into the capillary bore. See, [0036]. It is apparent that other than the similar term "optic fiber" used, its substantive meaning and contents in Dhadwal and the present invention are completely different. Furthermore, Dhadwal fails to disclosre or suggest the use of immobilized precursor to detect microorganisms or the use of sol-gel technique to form the coating.

Third, Ligler discloses an optical immunoassay for microbial analytes using non-specific dyes. See, title. The working principle of the optical immunoassay is similar to the one of Erb; crosslinking a molecule (e.g., antibody) to the surface of an optical fiber, and then contacting a fluid sample containing prestained microorganisms to the surface, and then the binding of the prestained microorganisms to the cross-linked molecules will produce a change of the light energy within the optical fiber. The assay of Ligler has an issue of non-specific binding addressed by Erb.

In conclusion, even if Erb, Cramp, Dhadwal and Ligler are impermissibly combined, they fail to teach or suggest the claimed invention in claim 14.

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Claims 15, 16 and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Erb in view of Cramp and in further view of Dhadwal, Ligler, and Soller (US 5,582,170)

The examiner rejects claims 15, 16 and 17 under 35 U.S.C. 103(a) as being unpatentable over Erb in view of Cramp and in further view of Dhadwal, Ligler, and Soller.

The detailed reasons for the examiner's rejections are as follows.

Erb, Cramp, Dhadwal and Ligler do not explicitly state that the step of monitoring the electromagnetic output is a spectroscopic method or adsorption analysis of the output. However, the steps of monitoring the output can be interpreted as a spectroscopic method. Also, the monitoring methods of Erb, Cramp, Dhadwal and Ligler can be adapted by the skilled artisan to be a spectroscopic monitoring method since such analytical methods are known within the art.

Soller discloses fiber optic sensor for measuring nitric oxide that includes for claims 15 and 16 monitoring the adsorption of NOX into hemoglobin by using adsorption spectroscopy (col. 3 lines 54-56) and the analysis of the data is by adsorption analysis and identifying the peaks for identifying changes of the NO concentration (col. 5 lines 57-60). For claim 17, the data is sent to a computer (computer 9) that the light output and input of the system (col. 8 lines 48 and 49). Therefore, it would have been obvious to one of ordinary skill in the art to employ the technique of using adsortion spectroscopy as suggested by Soller with the testing steps of Erb, Cramp, Dhadwal and Ligler in order to obtain the predictable result of monitoring the target molecule bound to the fiber.

Applicant respectfully traverses the rejection for the following reasons.

First, claims 15-17 are dependent from claim 14; thus all above discussion pertinent to claim 14 is applicable to claims 15-17.

Second, Soller discloses a fiber optic sensor for measurement of in vivo nitric acid concentration in a subject. It fails to teach or suggest the use of precursor to detect microorganisms or the use of sol-gel technique to coat the precursors onto the surface of the optic fibers as claimed in the present application. Whether the detector used in Soller

is similar to the ones claimed in claims 15-17 will not be discussed herein because Soller fails to supplement the deficiencies of Erb, Cramp, Dhadwal and Ligler.

In conclusion, even if Erb, Cramp, Dhadwal, Ligler and Soller are impermissibly combined, they fail to teach or suggest the claimed invention in claims 15-17.

Claim 18 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Erb in view of Cramp and in further view of Dhadwal, Ligler, Soller, and Carter et al. (US 4,608,344)

The examiner rejects claim 18 under 35 U.S.C. 103(a) as being unpatentable over Erb in view of Cramp and in further view of Dhadwal, Ligler, Soller, and Carter.

The detailed reasons for the examiner's rejections are as follows.

Erb, Cramp, Dhadwal, Ligler and Soller are silent regarding a computer or programmable device that can identify the genus or species of a microorganism.

Carter discloses an optical wave guide that for claim 18, includes the step where an electronic unit (unit 62) receives data from a photomultiple tube that has been amplified and provides a computation that provides the concentration of an unknown microorganism according to usual means which implies the use of an algorithm (col. 18 lines 35-38). Using this method would be obvious to one of ordinary skill in the art to employ the programmable device of Carter in order to identify the target microorganism of Erb, Cramp, Dhadwal, Ligler and Soller. The suggestion for doing so at the time would have been in order to have a microprocessor for computing the measured data and comparing this data with stored references (col. 18 lines 12-14).

Applicant respectfully traverses the rejection for the following reasons.

First, claim 18 is dependent from claim 14; thus all above discussion pertinent to claim 14 is applicable to claim 18.

Second, Carter fails to teach or suggest the use of precursor to detect microorganisms or the use of sol-gel technique to coat the precursors onto the surface of the optic fibers as claimed in the present application. Whether the electronic unit (62) used in Carter is similar to the one claimed in claim 18 will not be discussed herein

because Carter fails to supplement the deficiencies of Erb, Cramp, Dhadwal, Ligler and Soller.

In conclusion, even if Erb, Cramp, Dhadwal, Ligler, Soller and Carter are impermissibly combined, they fail to teach or suggest the claimed invention in claim 18.

Claim 18 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Erb in view of Cramp and in further view of Dhadwal, Ligler, Soller, Carter and Prober et al. (US 5,306,618)

The examiner rejects claim 19 under 35 U.S.C. 103(a) as being unpatentable over Erb in view of Cramp and in further view of Dhadwal, Ligler, Soller, Carter and Prober.

The detailed reasons for the examiner's rejections are as follows.

Erb, Cramp, Dhadwal, Ligler, Soller and Carter are silent regarding a programmable device that ascribes an index to the identified feature and provide an overall index for a sample.

Prober discloses a system for DNA sequencing that includes a computer (controller 52) that operates the overall system. For claim 19, Prober discloses that initializes data arrays (arrays R(I) & T(I)) and acquires the data points for each array from the detectors. This input is recorded on a data file, the index of each array is incremented, and a new data point is recorded. This is repeated based on a predetermined number of data points that are to be acquired by the system (Fig. 4a). However, Prober does not sum up these data points to generate a contamination value. This summation of the data points would be obvious to the skilled artisan since this is a standard mathematical operation and computer of Prober can be easily modified to perform this step. Therefore, it would be obvious to one of ordinary skill in the art to employ the indexing and data file suggested by Prober within the combined steps of Erb, Cramp, Dhadwal, Ligler, Soller and Carter in order to store the obtained features to a data file. The suggestion for performing this step at the time of the invention would have been in order to obtain the predictable result of being able to recall specific features based on where that feature has been indexed in the data file.

Applicant respectfully traverses the rejection for the following reasons.

First, claim 19 is dependent from claim 14; thus all above discussion pertinent to claim 14 is applicable to claim 19.

Second, Prober fails to teach or suggest the use of precursor to detect microorganisms or the use of sol-gel technique to coat the precursors onto the surface of the optic fibers as claimed in the present application. Whether the controller (52) used in Prober is similar to the one claimed in claim 19 will not be discussed herein because Prober fails to supplement the deficiencies of Erb, Cramp, Dhadwal, Ligler, Soller and Carter to the claimed subject matters of claim 14.

In conclusion, even if Erb, Cramp, Dhadwal, Ligler, Soller, Carter and Prober are impermissibly combined, they fail to teach or suggest the claimed invention in claim 19.

Conclusion

Claims 1-7, 9-12 and 14-19 are in condition for allowance. Therefore, Applicant respectfully requests that the rejection to Claims 1-7, 9-12 and 14-19 under 35 U.S.C. 103(a) be withdrawn.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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